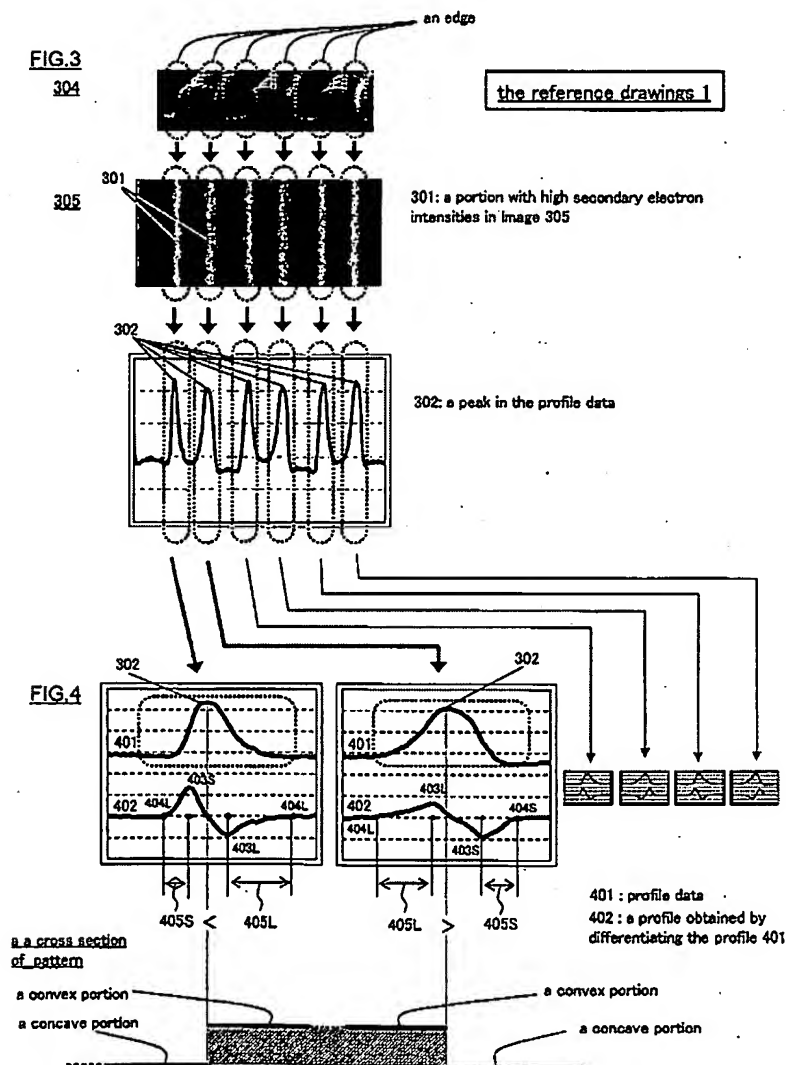## REMARKS

Claims 12, 14-16 and 20 have been amended. Claims 1-11, 17 and 18 were previously canceled. Claims 12-16, 19 and 20 are currently pending in this application. Applicants reserve the right to pursue the original and other claims in this and other applications. Applicants respectfully request reconsideration in light of the above amendments and the following remarks.

Claims 12 and 14 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. This rejection is respectfully traversed and reconsideration is respectfully requested. Claims 12 and 14 have been amended to further clarify the portion of the claims which the Office Action indicates are lacking enablement. Additionally, the Examiner "concluded that the newly amended claim limitation is improper because the specification does not describe judging, by comparing the distances 405S and 405L of the derivative of peak 401 (note Figure 4), as corresponding to a line pattern or a space between line patterns, but rather the distances 405S and 405L correspond to the space side and the line side respectively of the peak vertex of the profile 401." Office Action, pg. 3. "The examiner also conclude[d] that the claimed first and second distances of the derivative waveform cannot be used to determine a line pattern or a space between line patterns, because the first and second distances of the derivative waveform are calculated for a single peak of a profile waveform..." Id. Applicants respectfully disagree with the Examiner's contentions in this regard. With a method of determining a line pattern or a space (and a method of determining concavity or convexity of a line or space) according to the claims, determinations can be made even with a single peak, that is, a profile waveform for one edge. As seen in the Reference Drawing 1 (which includes annotated versions of Figs. 3 and 4, and is included below, next page), a single peak corresponds to, by way of example, one of two edges of a line pattern, and there is either a line (i.e., a convex pattern) or a space (i.e., a concave pattern) on the right side of that one edge, while on the left side there is either a space (i.e., a concave pattern) or a line (i.e., a convex pattern) that was absent on the right. With respect to the profile waveforms of line and space patterns, there are only two types of information that may be obtained from a profile waveform for one edge. Specifically, it would either be a peak (of a profile waveform for one edge) where there is a line (i.e., a convex pattern) on the right side and a space

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(i.e., a concave pattern) on the left side, or a peak (of a profile waveform for one edge) where there is a space (i.e., a concave pattern) on the right side and a line (i.e., a convex pattern) on the left side.

FIG.3
304

an edge

the reference drawings 1

305

301: a portion with high secondary electron intensities in image 305

302: a peak in the profile data

FIG.4

401 : profile data
402 : a profile obtained by differentiating the profile 401

a a cross section of pattern

a convex portion

a concave portion

a convex portion

a concave portion

Based on this premise, once it is identified which of the two types of single peaks (described above) that a particular single peak is, it becomes possible to identify the positional relationship of the line (i.e., a convex pattern) and space (i.e., a concave pattern) on the left and right of the apex (vertex) of that single peak. Further, since the two types of single peaks described above are both characterized in that the foot (tail) on one side (either the left or the right of the apex

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of a single peak) is longer than the foot (tail) on the other side, it is possible to differentiate between the two types by comparing the relative widths (of the tails) on the left and right of the single peak. It is also described in the specification with respect to Figure 4 and describing a single peak, that "[e]valuation values can be calculated for the left and right sides of the center at the peak vertex of the profile, using the intervals 405S and 405L of the differentiated profile of FIG. 4 relative to the respective zero points, and the larger evaluation value (the peak with a wider foot) is determined as corresponding to the line." US Pub. 2004/0222375, ¶[0040]. Reference drawing 2 (included below) shows another example of determinations using a single peak.

FIG.3'
304

the reference drawings 2

305

301: a portion with high secondary electron intensities in image 305

302: a peak in the profile data

401 : profile data

402 : a profile obtained by differentiating the profile 401

FIG.4

a cross section of pattern

a convex portion

a concave portion

a convex portion

a concave portion

a convex portion

a concave portion

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Accordingly, Applicants respectfully submit that a concave and convex determination for line and space patterns may be made based on a derivative waveform for a single peak, as described above. Therefore, Applicants respectfully submit that the rejection be withdrawn and the claims allowed.

Claims 12-16, 19 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Dudley et al. (U.S. Patent No. 6,627,887) ("Dudley") in view of Archie (U.S. Patent No. 6,472,662) ("Archie"). This rejection is respectfully traversed and reconsideration in respectfully requested.

Applicants respectfully submit that the cited combination does not disclose all features of the claims. The Office Action relies on col. 2, lines 48-66 of Dudley as indicating that Dudley discloses a method of determining a line pattern. Office Action, pg. 5. Applicants note that this portion of Dudley is merely an overview of CD-SEMs and includes no disclosure of a method of determining lines and spaces, nor any motivation therefore. Further, the objective in Dudley is to find edge points 163, 166 based on calculations of W, LEW, REW with respect to a plurality of baselines (BL0-BL5).

If one were to, hypothetically, try to implement the claimed invention in Dudley, it would be necessary, in the case of left edge 129a, to compare the first distance between "the starting point on the left side of LEW0" and "the positive peak of the first derivative waveform 143 that exists furthest to the left" with the second distance between "the negative peak of the first derivative waveform 143 that exists farthest to the left" and "the point at which the first derivative waveform 143 adjacent on the right side of the negative peak intersects BL0." However, Dudley contains no such disclosure or suggestion. Further, given the objective of Dudley to find edge point 163, there is no need or motivation in Dudley to perform such a comparison.

Archie is relied upon as disclosing providing waveforms of SEM scans over both line and space patterns (Office Action, pg. 7), but does not remedy the deficiencies of Dudley as discussed. Archie does not disclose, or render obvious, comparing the lengths of the respective feet

(tails) of the positive peak and negative peak of a derivative waveform for one edge – a feature which is unique to the claimed invention.
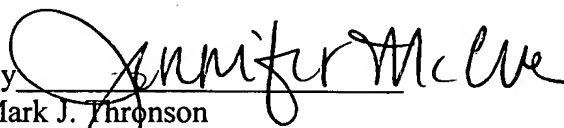
Additionally, the claimed feature of adjusting the measurement position ensures appropriate determination of the measurement subject (e.g., line or space). The additionally added feature of skipping measurement if judging is unsuccessful, prevents the wrong subject from being measured if the line or space judgment is unsuccessful. Without the claimed technical feature of judging which of the left and right sides of a peak apex of a single peak is a line (i.e., a convex portion) and which is a space (i.e., a concave portion), neither of these additional features of adjusting the measurement position or skipping the measurement would be possible.

Accordingly, for at least these reasons, Applicants respectfully submit that claims 12 and 14 are allowable over the cited combination. Claims 13 and 19 depend from claim 12 and are allowable along with claim 12. Claims 15, 16 and 20 depend from claim 14 and are allowable along with claim 14. Applicants respectfully request the rejection be withdrawn and the claims allowed.

In view of the above, Applicants believe the pending application is in condition for allowance.

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Respectfully submitted,

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